Notice of Allowability	Application No.	Applicant(s)	
	10/817,081	TIWARI ET AL.	
	Examiner	Art Unit	
	Corey M. Broussard	2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to _____.

2. ☒ The allowed claim(s) is/are *1-27*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 4/1/04
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☒ Other e-mail correspondence

LYNN FEILD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

DETAILED ACTION

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in an e-mail from Chuck Hieken (Reg#18,411) on March 14, 2006. The application has been amended as follows:

Amend the claims as directed below, do not change claims not appearing below:

1. (Currently Amended) An apparatus comprising:

a housing cover to cause electrical components on a circuit board to engage with at least one component pad of a heat sink, the housing cover being substantially coextensive with the circuit board;

a first and second projection integrally formed from the housing cover, the projections located on the cover to bias the electrical components against the component pad, the projections proximate each other; ~~and~~

a mechanism that permits a vertical displacement of the projections relative to the vertical displacement of the housing cover; and

a spanning member extending over a portion of the first and second projections and coupled with the cover.

4. (Canceled)

6. (Currently Amended) The apparatus of claim 41, wherein the ~~further comprising a~~ spanning ~~element~~ member extend~~ings~~ along the projections to substantially limit the upward vertical displacement of the projections.

9. (Currently Amended) The apparatus of claim 41, wherein the ~~further comprising a~~ spanning ~~lever~~ member is attached to the first projection and the second projection and to an intermediate pivot therebetween.

19. (Currently Amended) An audio amplifier configured for use in a vehicle, the amplifier comprising:

a heat sink chassis containing a circuit board and configured for dissipating heat from electrical components positioned on the circuit board to ambient surroundings;

a housing cover fitted to the chassis to cause electrical components positioned on a first side of the circuit board to engage with at least one component pad extending from the heat sink chassis;

a first and second projection integrally formed from the housing cover, the projections located on the cover to bias a second side of the circuit board opposite the first side, to cause electrical components to engage the component pad, the projections proximate each other; ~~and~~

a mechanism that permits a vertical displacement of the projection relative to the vertical displacement of the housing cover; and

a spanning member extending over a portion of the first and second projections and coupled with the cover.

22. (Currently Amended) A method of manufacturing a housing cover for an amplifier, the method comprising:

integrally forming the cover from a unitary work-piece, the cover comprising:

a first and second projection integrally formed from the housing cover, the projections located on the cover to bias the electrical components against the component pad, the projections formed proximate to each other; ~~and~~

a mechanism that permits a vertical displacement of the projection relative to the vertical displacement of the housing cover; and

a spanning member formed over a portion of the first and second projections and coupled with the cover.

24. (Canceled)

25. (Currently Amended) The method of claim 23 wherein the ~~cover is formed with a~~ spanning ~~element~~ member extend~~ings~~ along the projections to substantially limit the upward vertical displacement of the projections.

26. (Currently Amended) The method of claim 23 wherein the ~~cover is formed with a~~ spanning ~~lever~~ member is attached to the first projection and the second projection and to an intermediate pivot therebetween.

27. (Currently Amended) A method for engaging electrical components on a circuit board of an audio amplifier with a portion of a heat sink, the method comprising:

providing a unitary housing cover, the cover being substantially coextensive with the circuit board, to permit a vertical displacement of integrally formed projections relative to a vertical displacement of the housing cover;

applying the cover to the amplifier housing; engaging a first electrical component with the component pad by biasing an area on a second side of the circuit board, opposite the first side of the circuit board; ~~and~~

engaging a second electrical component with the component pad by biasing an area on the second side of the circuit board, opposite the position of the second electrical component; and

applying a spanning member over a portion of the first and second projections and engaging the cover.

Allowable Subject Matter

2. Claims 1-3, 5-23, and 25-27 allowed.

3. The following is a statement of reasons for the indication of allowable subject matter: The allowability resides in the overall structure of the device as recited in independent apparatus claim 1 or 19, and at least in part, because claim 1 and 19 recite: "a spanning member extending over a portion of the first and second projections and coupled with the cover".

The aforementioned limitations in combination with all remaining limitations of claims 1 and 19 respectively are believed to render said claims 1 and 19 and all claims dependent therefrom patentable over the art of record.

The closest reference to the present invention is believed to be Chiu et al. (PN 5,965,937).

Chiu teaches wherein Chiu teaches a heat sink, a cover, circuit board, a component, and a spring member biasing the back side of the circuit board bringing the component in contact with the heat sink, but did not disclose "a spanning member extending over a portion of the first and second projections and in direct contact with the cover".

4. The allowability resides in the overall structure of the device as recited in independent apparatus claim 17 and at least in part, because claim 17 recites: "a spanning element lever that biases the second projection against the direction for the displacement motion of the first projection".

The aforementioned limitations in combination with all remaining limitations of claim 17 are believed to render said claim 17 and all claims dependent therefrom patentable over the art of record.

Chiu teaches wherein Chiu teaches a heat sink, a cover, circuit board, a component, and a spring member biasing the back side of the circuit board bringing the component in contact with the heat sink, but did not disclose "a spanning element lever that biases the second projection against the direction for the displacement motion of the first projection".

5. The allowability resides in the overall structure of the device as recited in independent apparatus claim 20 and at least in part, because claim 20 recites: "a

spanning element extending along at least one projection to substantially limit the upward deflection of the projections".

The aforementioned limitations in combination with all remaining limitations of claim 20 are believed to render said claim 20 and all claims dependent therefrom patentable over the art of record.

Chiu teaches wherein Chiu teaches a heat sink, a cover, circuit board, a component, and a spring member biasing the back side of the circuit board bringing the component in contact with the heat sink, but did not disclose "a spanning element extending along at least one projection to substantially limit the upward deflection of the projections".

6. The allowability resides in the overall structure of the device as recited in independent apparatus claim 21 and at least in part, because claim 21 recites: "a spanning lever attached to the first projection and the second projection and to an intermediate pivot therebetween; wherein a positive vertical displacement of the first projection causes a proportional negative vertical displacement of the second projection".

The aforementioned limitations in combination with all remaining limitations of claim 21 are believed to render said claim 21 and all claims dependent therefrom patentable over the art of record.

Chiu teaches wherein Chiu teaches a heat sink, a cover, circuit board, a component, and a spring member biasing the back side of the circuit board bringing the component in contact with the heat sink, but did not disclose "a spanning lever attached

to the first projection and the second projection and to an intermediate pivot therebetween; wherein a positive vertical displacement of the first projection causes a proportional negative vertical displacement of the second projection".

7. The allowability resides in the overall structure of the device as recited in independent method claim 22 and at least in part, because claim 22 recites: "a spanning member formed over a portion of the first and second projections and coupled with the cover".

The aforementioned limitations in combination with all remaining limitations of claim 22 are believed to render said claim 22 and all claims dependent therefrom patentable over the art of record.

Chiu teaches wherein Chiu teaches a heat sink, a cover, circuit board, a component, and a spring member biasing the back side of the circuit board bringing the component in contact with the heat sink, but did not disclose "a spanning member formed over a portion of the first and second projections and in direct contact with the cover".

8. The allowability resides in the overall structure of the device as recited in independent method claim 27 and at least in part, because claim 27 recites: "applying a spanning member over a portion of the first and second projections and engaging the cover".

The aforementioned limitations in combination with all remaining limitations of claim 27 are believed to render said claim 27 and all claims dependent therefrom patentable over the art of record.

Chiu teaches wherein Chiu teaches a heat sink, a cover, circuit board, a component, and a spring member biasing the back side of the circuit board bringing the component in contact with the heat sink, but did not disclose "applying a spanning member over a portion of the first and second projections and directly engaging the cover".

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Saito (PN 6,025,991), Watanabe (PN 6,034,874), Patel et al. (PN6,317,325), and Choi (PN 6,618,252) demonstrating prior art depressions capable of vertical movement and facilitating cooling of a circuit board mounted component. Fitzgerald et al. (US Pub 2003/0090875) and Morelock (US Pub 2003/0174469) demonstrating clamps used to thermally couple a circuit board mounted component to a heat sink. Belady et al. (US Pub 2003/0150605) teaching a heat sink spanning across several components. Lehrmann et al. (PN 5,712,765) teaching clamping a circuit board mounted component to a cover to cool the power component where the device is used in automotives. Chiu et al. (PN 5,965,937) teaching a spring member attached to the

cover to bias the back of a circuit board having a component towards a heat sink to thermally couple the component and the heat sink. Lazenby et al. (PN 5,065,279) teaching a cover with a projection that is vertically displaceable and biases a circuit board mounted component against a heat sink.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Corey M. Broussard whose telephone number is 571 272 2799. The examiner can normally be reached on 7:30-5 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn Feild can be reached on 571 272 2092. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CMB
cmb

LYNN FEILD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800